ment and EDXRF equipment. Investigations were financed by a grant (No. S-MIP-17-133) from the Research Council of Lithuania.

REFERENCES

1. Guobytė R. Aerofotonuotraukų stereoskopinės analizės panaudojimas archeologiniuose tyrimuose. Metodai Lietuvos archeologijoje. Mokslas ir technologijos Lietuvos praeities pažinimui. – 2013. – P. 606–617.

PALAEOGEOGRAPHY OF THE LOWER KUYA VALLEY (EUROPEAN ARCTIC RUSSIA) OF THE LATE HOLOCENE

Golubeva Yu.V., Buravskaya M.N.

Institute of Geology, Komi Scientific Centre, Ural Branch of RAS, Syktyvkar, Russia

Previous study of the Quaternary palaegeography of the Kuya River valley (Lavrov, Potapenko, 2012; Andreicheva, 2002; Isakov et al., 2017) does not concern the Holocene environmental history. Our preliminary conclusions from investigation of lithological composition and palynological study of Holocene alluvium have been presented earlier (Marchenko-Vagapova, Buravskaya, 2017). The results are supported by new palynological data.

The alluvial sediments in the Lower Kuya valley in the European part of the Russian Arctic were studied in section K12 (67°37′N, 53°24′E) which is a left bank cutting 4 m high (Fig. 1).

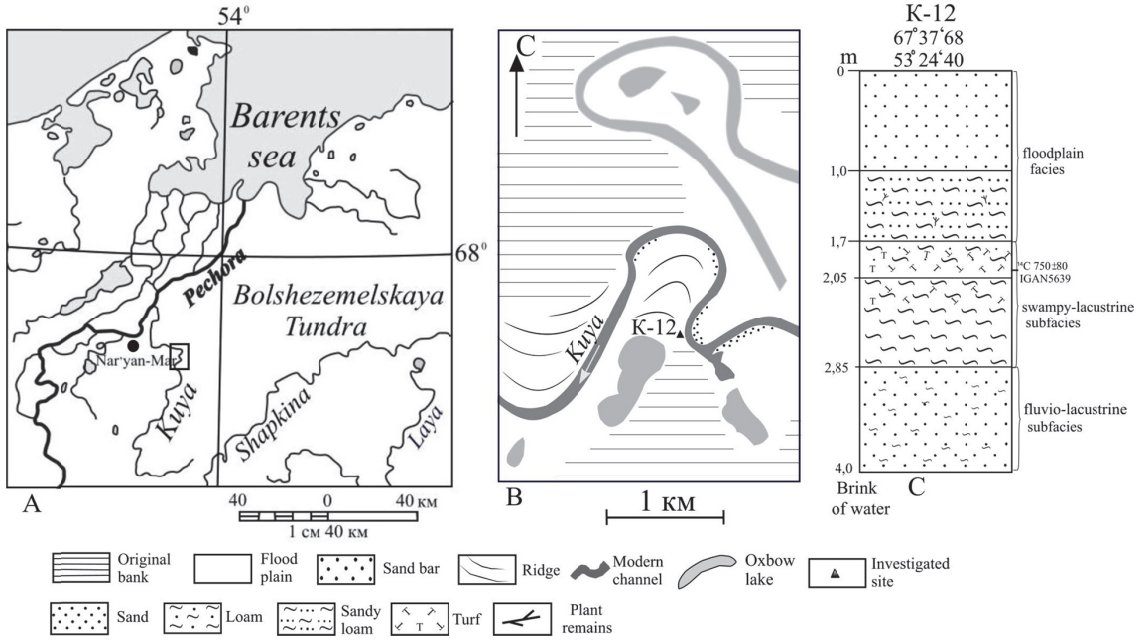

Fig. 1. The Kuya 12 site
A. Location of the investigation site. The study area is shown with square
B. Geomorphological scheme of the site
C. Lithological composition of the Kuya 12 section

The sediments are composed of flood plain and oxbow-lake facies (fluvio-lacustrine and swampy-lacustrine subfacies). The fluvio-lacustrine subfacies is the bottom of sedimentary beds (depth 2.85 – 4 m) and composed of grey fine-grained clayey sand. These deposits formed in flowing water reservoir, when an initial lake was connected with a channel. The lowermost sediments contain spectra (pollen zone K12-I, 4-2,65 m; Fig. 2) showing the coldest climate during the studied interval. The spectra are dominated by *Betula* sect. *Nanae* and Poaceae pollen. High amount of Bryales spores is also characteristic. The spectra composition indicates the development of a dwarf-birch tundra at the beginning of the Subatlantic period.

The overlying swampy-lacustrine subfacies (depth 1.7 – 2.85 m) is composed of blue-grey clay and clayey peat and is correspond to deposits accumulating in closed lake and bog lake during the middle - late Subatlantic. Pollen zone K12-II (2,65-2,05 m) is notable for a dramatic increase in *Picea* and *Pinus sylvestris* (in the lower part of pollen zone K12-II) and *Betula* sect. *Albae* (in the upper part of pollen zone K12-II) indicate the stands of forest-tundra character development during the middle Subatlantic. The presence of an aquatic environment supported by *Menyanthes, Potamogeton* and *Nymphaea* pollen. The occurrence of *Nymphaea* confirms that temperatures were higher than present. The late Subatlantic (LIA cooling) is identifiable by spore-pollen spectra (pollen zone K12-III, 2,05-1,7 m), supported by radiocarbon date 750±80 BP (IGAN-5639). The cooling enabled the spread of shrub vegetation (dwarf birch, alder and willow). Grasses were also very common. Species from Cyperaceae, Poaceae, Ericaceae, Primulaceae, Onagraceae, Ranunculaceae, Rosaceae, Caryiphylaceae, *Filipendula,* Fabaceae, *Valeriana*, Asteraceae, *Thalictrum, Chamaepericlymenum* grew in the area.

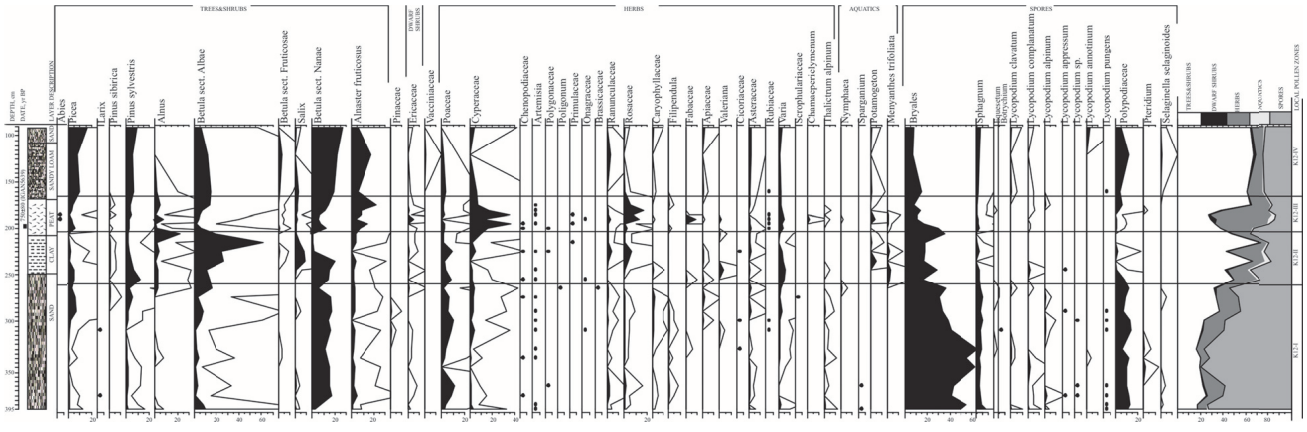

Fig. 2. Pollen percentage diagram of the Kuya 12 section

The clay and peat deposits are overlying by brown sandy loam with plant remains of the flood plain facies (depth 0 – 1.7 m). Pollen zone K12-IV (1,7-0,9 m) reflects a gradual development into the present forest-tundra and southern tundra mosaics of open woodlands, dwarf-shrubs and grasslands. The dominant vegetation of the wider surroundings consists of dwarf-shrub heaths (with e.g. *Betula nana,* Ericaceae). Sparse spruce and birch forests grow along the riverbed. The pollen zone K12-IV is notable for an increase *Picea* and Poaceae pollen contents. Increases in *Sphagnum* and Polypodiaceae percentages are also characteristic, while Bryales is decresed.

REFERENCES

1. Andreicheva L.N. Pleistocene of Evropean North-East. – 2002. – P. 324 [in Russian].

2. Isakov V.A. The lithological composition of Quaternary sediments in the Kuya River valley (lower course of the Pechora River) / V.A. Isakov et al. // Geology, geoecology and resource potential of the Urals and cross-border regions. – 2017. – P. 15–19 [in Russian].

3. Lavrov A.S. Neo- Pleistocene of Pechora Lowland and in the West of Timan (stratigraphy, palaegeography, chronology). – 2012. – P. 191 [in Russian].

4. Marchenko-Vagapova T.I. Holocene landscape and climate dynamics history in the North-West of Bolshezemelskaya Tundra / T.I. Marchenko-Vagapova, M.N. Buravskaya // European Russian Arctic zone: scenarios of development. – 2017. – P. 45–47 [in Russian].